REMARKS

In the Final Office Action, Examiner Piziali rejected pending claims 1-18 on various grounds. The Applicant responds to each rejection as subsequently recited herein, and respectfully requests reconsideration and further examination of the present application under 37 CFR § 1.112:

A.   Examiner Piziali rejected pending claims 1-7, 9-15, 17, and 18 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,677,705 to *Shimura* et al.

The Applicant has thoroughly considered Examiner Piziali's remarks concerning the patentability of claims 1-7, 9-15, 17 and 18 over *Shimura*. The Applicant has also thoroughly re-read *Shimura*. To warrant this anticipation rejection of claims 1-7, 9-15, 17 and 18, *Shimura* must show each and every limitation of independent claims 1 and 9 in as complete detail as in contained in independent claims 1 and 9. See, MPEP §2131. The Applicant respectfully traverse this anticipation rejection of independent claims 1 and 9, because *Shimura*, among other things, fails to disclose and teaches away from "within which four elementary units of time one pulse each time has a first polarity which opposes a second polarity of the other pulses" as recited in independent claim 1, and "wherein, for each elementary unit of time, one pulse has a first polarity that opposes a second polarity of the other pulses" as recited in independent claim 9.

As to the traversal, Examiner Piziali asserts that *Shimura* illustrates the aforementioned limitations of independent claims 1 and 9 in FIG. 5 of *Shimura*. However, a proper understanding of Shimura reveals that *Shimura* in fact does not teach the aforementioned limitations of independent claims 1 and 9 in FIG. 5 of *Shimura* for a couple of reasons.

First, *Shimura* illustrates eight (8) Walsh functions in FIG. 5 of *Shimura*. This teaching by *Shimura* is analogous with the four (4) orthogonal functions (e.g., Walsh functions) illustrated in FIG. 4a of the present application, which is encompassed in independent claim 1 with the recitation of "wherein the mutually orthogonal signals are obtained from at least two types of orthogonal functions having four elementary

units of time", and is encompassed by independent claim 9 with the recitation of

"wherein the *p* mutually orthogonal signals are obtained from at least two types of

orthogonal functions having four elementary units of time". As such, this teaching by

Shimura is not directed to mutually orthogonal signals obtained from the eight (8)

Walsh functions. Thus, *Shimura* fails to teach such mutually orthogonal signals

obtained from the eight (8) Walsh functions "within which four elementary units of

time one pulse each time has a first polarity which opposes a second polarity of the

other pulses" as recited in independent claim 1, and "wherein, for each elementary

unit of time, one pulse has a first polarity that opposes a second polarity of the other

pulses" as recited in independent claim 9. These limitations of independent claims 1

and 9 are directed to the four (4) orthogonal signals illustrated in FIG. 4b of the

present application that are obtained from the four (4) orthogonal functions illustrated

in FIG. 4a of the present application.

Second, the teaching by *Shimura* as illustrated in FIG. 5 does not, for each

elementary unit of time, having only one pulse with a first polarity that opposes the

second polarity of the other pulses as evidenced by the following TABLE:

TIME (t)	FIRST POLARITY (+1)	SECOND POLARITY (-1)
1	Ø(1) - Ø(8)	None
2	Ø(1) - Ø(4)	Ø(5) - Ø(8)
3	Ø(1), Ø(2), Ø(7), Ø(8)	Ø(3) - Ø(6)
4	Ø(1), Ø(2), Ø(5), Ø(6)	Ø(3), Ø(4), Ø(7), Ø(8)
5	Ø(1), Ø(4), Ø(5), Ø(8)	Ø(2), Ø(3), Ø(6), Ø(7)
6	Ø(1), Ø(4), Ø(6), Ø(7)	Ø(2), Ø(3), Ø(5), Ø(8)
7	Ø(1), Ø(3), Ø(6), Ø(8)	Ø(2), Ø(4), Ø(5), Ø(7)
8	Ø(1), Ø(3), Ø(5), Ø(7)	Ø(2), Ø(4), Ø(6), Ø(8)

In the Final Office Action, Examiner Piziali's basis for this anticipation

rejection is an indiscriminate division of a time segment into an infinite number of

sub-segments of time that enables Examiner Piziali to assert that *Shimura* teaches the

aforementioned limitations of independent claims 1 and 9. However, this

indiscriminate division of a time segment by Examiner Piziali is neither taught nor

suggested by *Shimura*. Moreover, this indiscriminate division of a time segment by

Examiner Piziali opposes the teachings of FIG. 5 of *Shimura*, which is based on each

time segment being the smallest unit of time for eight (8) Walsh functions illustrated in FIG. 5. See, *Shimura* at column 3, line 59 to column 5, line 59.

Withdrawal of the rejection of independent claims 1 and 9 under 35 U.S.C. §102(b) as being anticipated by *Shimura* is therefore respectfully requested.

Claims 2-7, and 17 depend from independent claim 1. Therefore, dependent claims 2-7, and 17 include all of the elements and limitations of independent claim 1. It is therefore respectfully submitted by the Applicant that dependent claims 2-7, and 17 are allowable over *Shimura* for at least the same reason as set forth with respect to independent claim 1 being allowable over *Shimura*. Withdrawal of the rejection of dependent claims 2-7, and 17 under 35 U.S.C. §102(b) as being anticipated by *Shimura* is therefore respectfully requested.

Claims 10-15, and 18 depend from independent claim 9. Therefore, dependent claims 10-15, and 18 include all of the elements and limitations of independent claim 9. It is therefore respectfully submitted by the Applicant that dependent claims 10-15, and 18 are allowable over *Shimura* for at least the same reason as set forth with respect to independent claim 9 being allowable over *Shimura*. Withdrawal of the rejection of dependent claims 10-15, and 18 under 35 U.S.C. §102(b) as being anticipated by *Shimura* is therefore respectfully requested.

B.   Claims 8 and 16 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,677,705 to *Shimura* et al. in view of U.S. Patent No. 6,252,573 B1 to *Ito* et al.

Claim 8 depends from independent claim 1. Therefore, dependent claim 8 includes all of the elements and limitations of independent claim 1. It is therefore respectfully submitted by the Applicant that dependent claim 8 is allowable over *Shimura* in view of *Ito* for at least the same reason as set forth with respect to independent claim 1 being allowable over *Shimura*. Withdrawal of the rejection of dependent claim 8 under 35 U.S.C. §103(a) as being unpatentable over *Shimura* in view of *Ito* is therefore respectfully requested.

Claim 16 depends from independent claim 9. Therefore, dependent claim 16 includes all of the elements and limitations of independent claim 9. It is therefore respectfully submitted by the Applicant that dependent claim 16 is allowable over *Shimura* in view of *Ito* for at least the same reason as set forth with respect to independent claim 9 being allowable over *Shimura*. Withdrawal of the rejection of dependent claim 16 under 35 U.S.C. §103(a) as being unpatentable over *Shimura* in view of *Ito* is therefore respectfully requested.